

(No Model.)

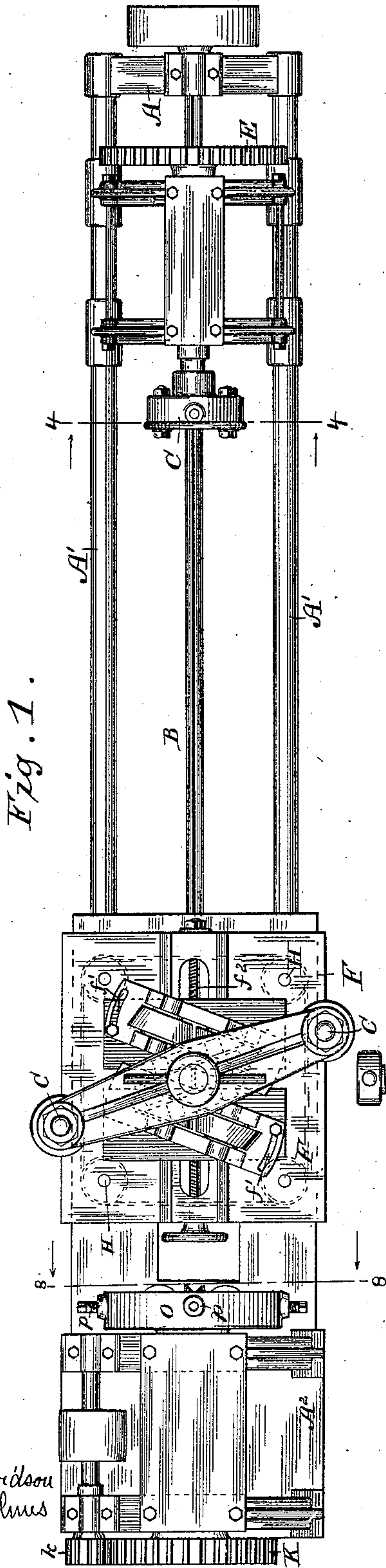
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P. MEDART.

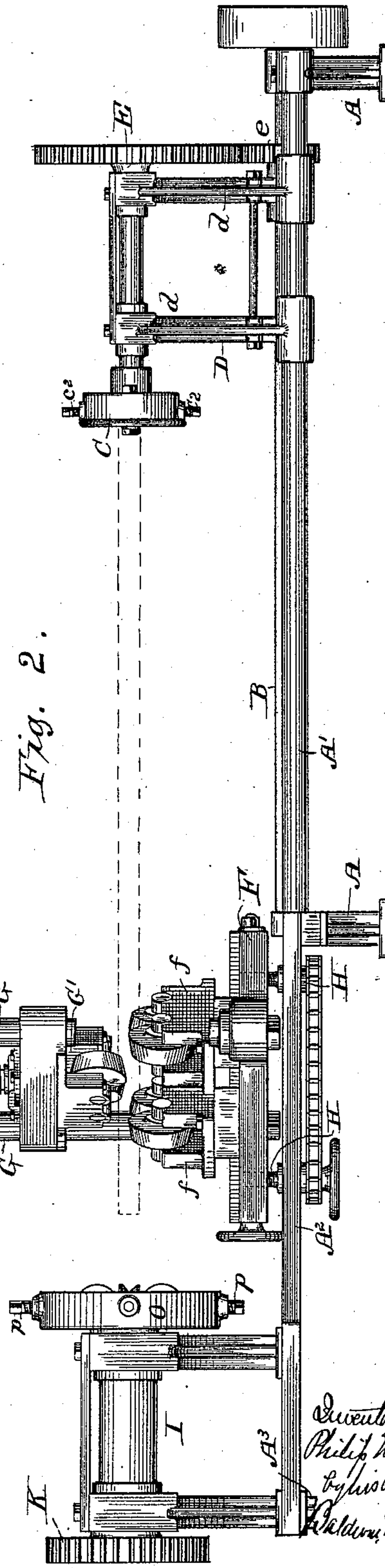
MACHINE FOR STRAIGHTENING METAL BARS OR PIPES.

No. 352,706.

Patented Nov. 16, 1886.



Witnesses:
C. Davidson
J. L. Holmes



Witnesses:
Philip Medart
By his Attorney
W. L. H. H. H.

(No Model.)

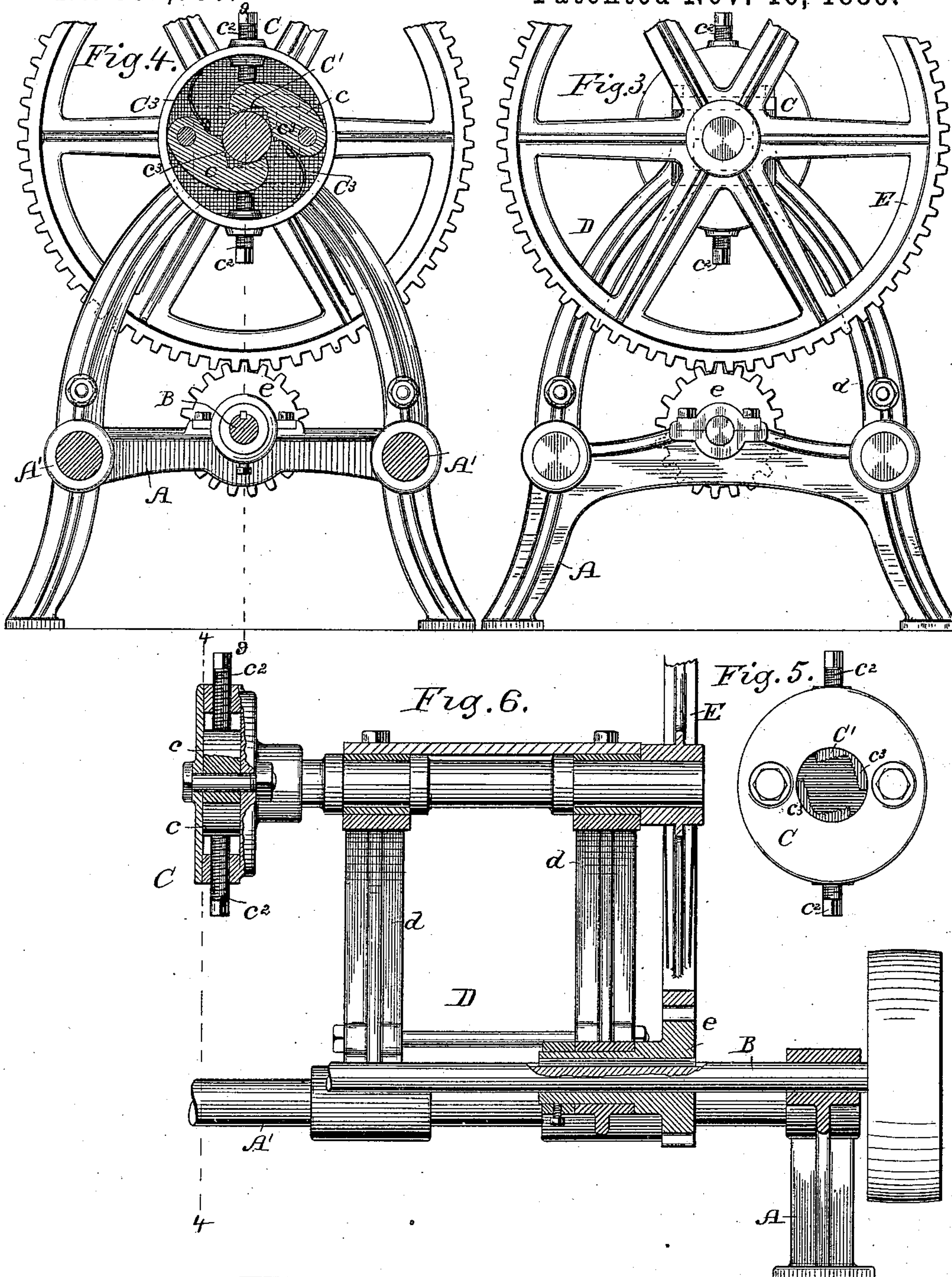
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Inventor:
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By his Attorneys
R. L. Davidson, Nephew & Partner

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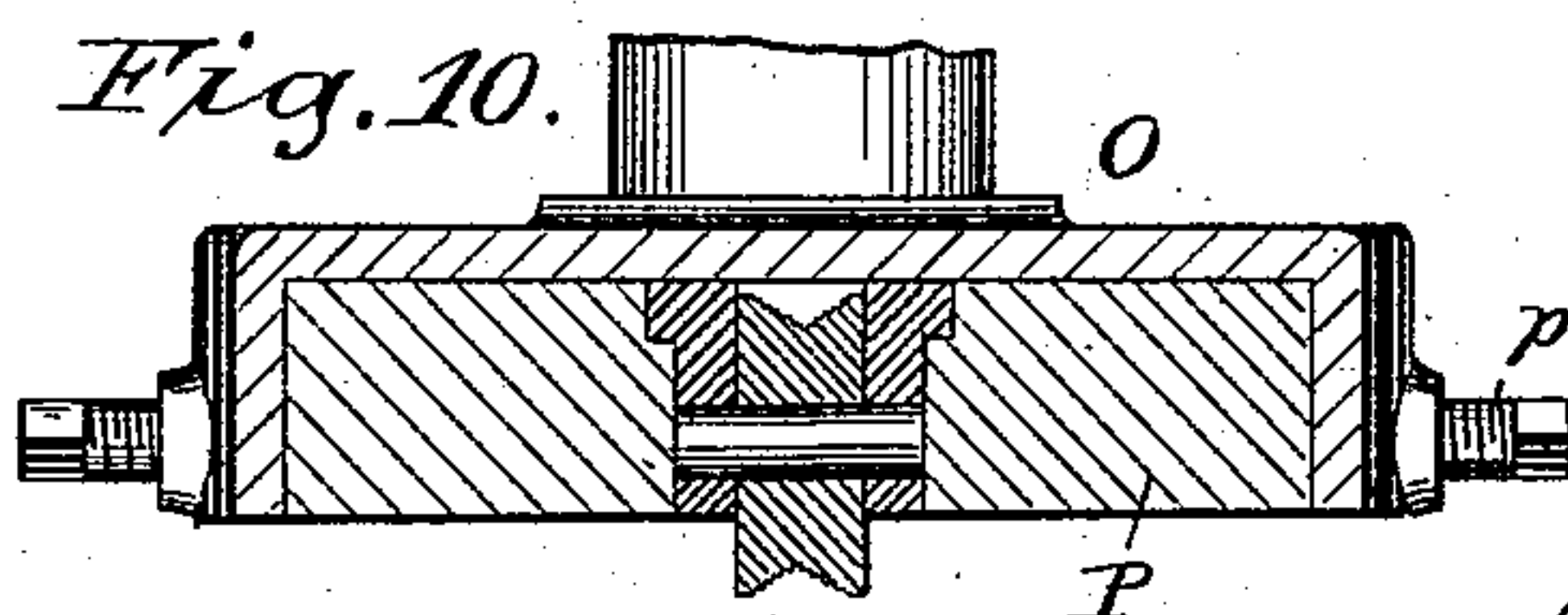
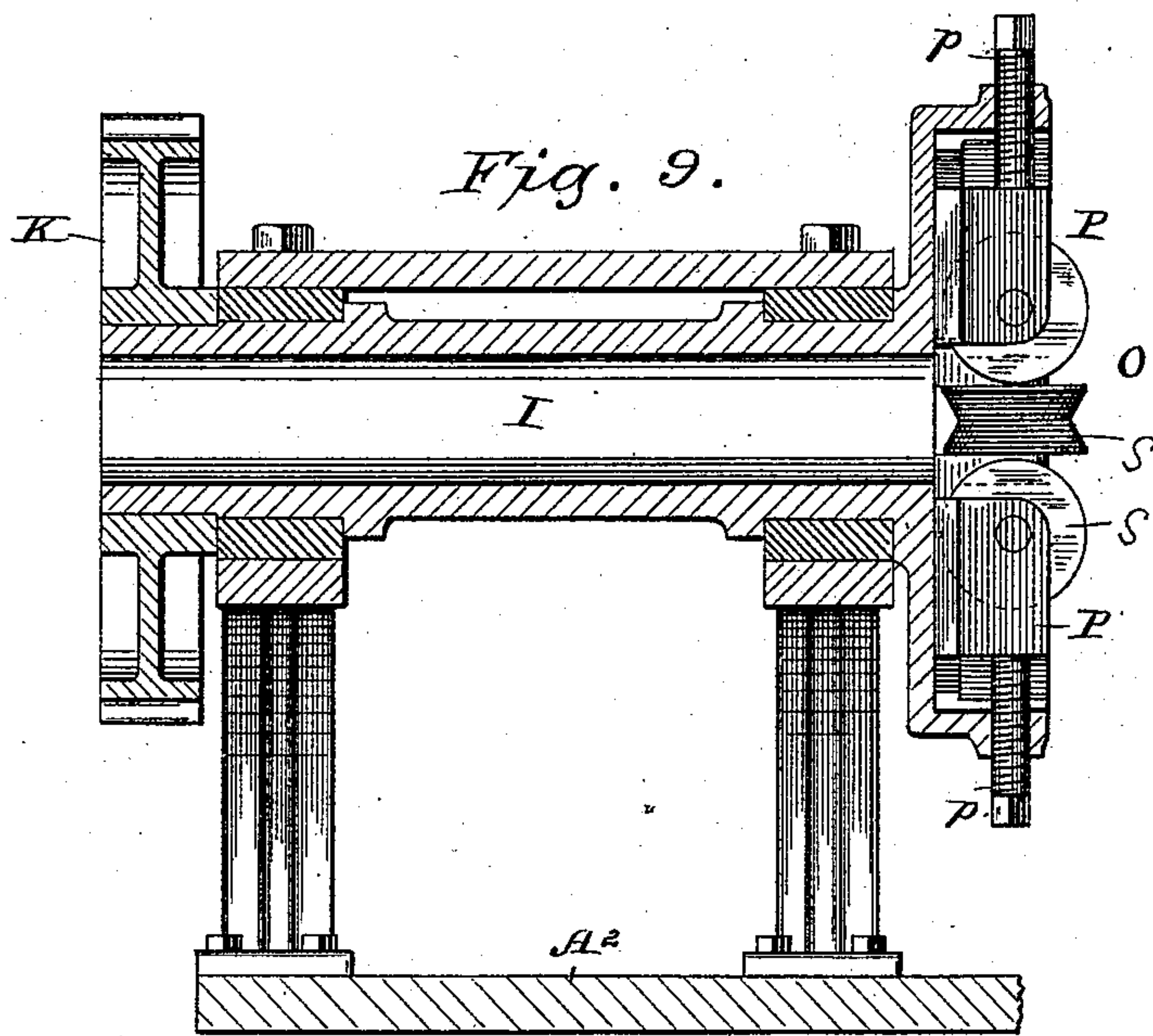
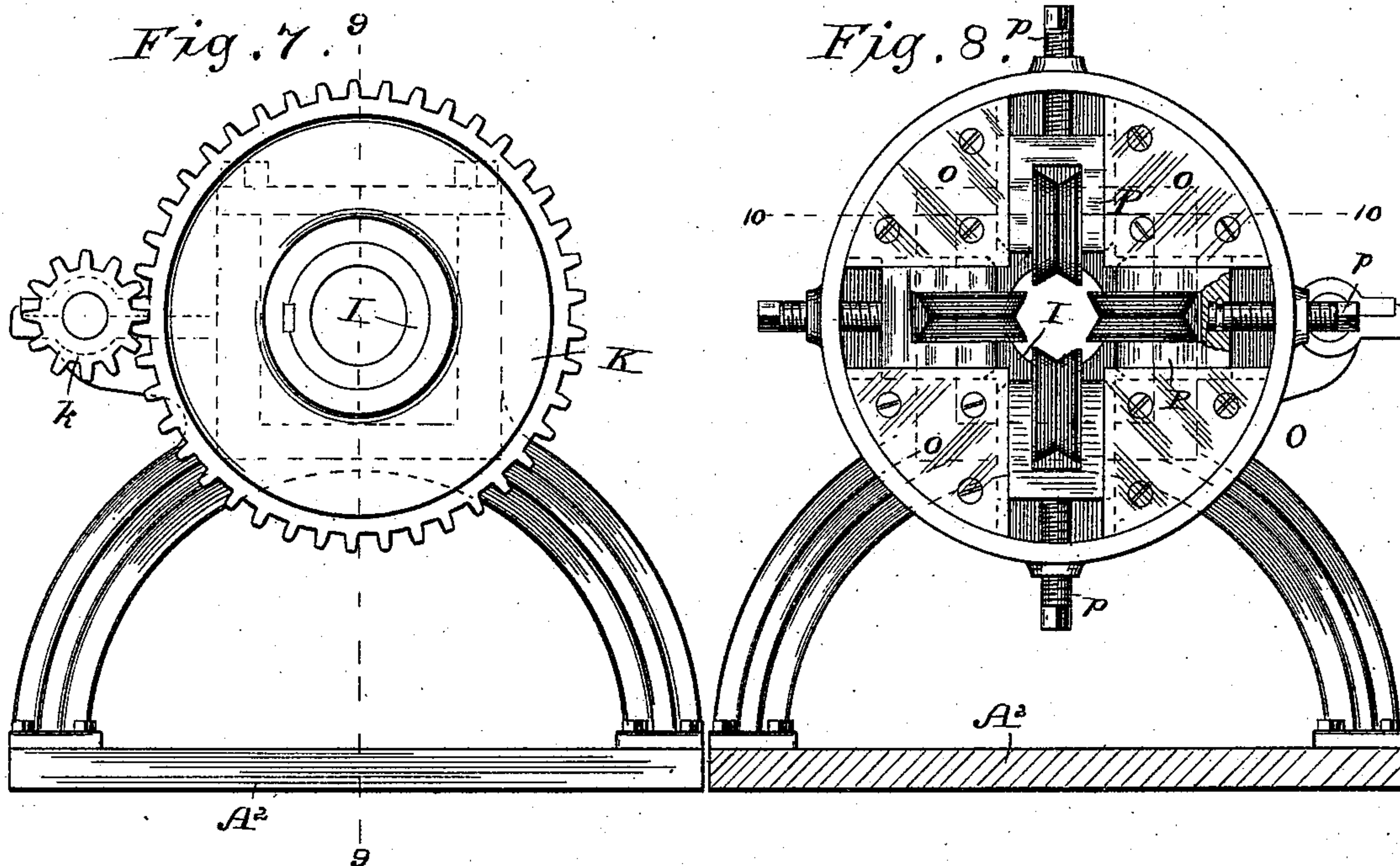
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Witnesses:
E. B. Davidson
J. L. Holmes.

Inventor:
Philip Medart
By his Attorneys
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UNITED STATES PATENT OFFICE.

PHILIP MEDART, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF TO
WILLIAM MEDART, OF SAME PLACE.

MACHINE FOR STRAIGHTENING METAL BARS OR PIPES.

SPECIFICATION forming part of Letters Patent No. 352,706, dated November 16, 1886.

Application filed April 12, 1886. Serial No. 198,559. (No model.)

To all whom it may concern:

Be it known that I, PHILIP MEDART, of St. Louis, Missouri, have invented certain new and useful Improvements in Machines for
5 Straightening Metal Bars or Pipes, of which the following is a specification.

In an application for Letters Patent filed by me January 13, 1886, and numbered 188,418, I have shown and described a machine for
10 straightening metal bars or pipes in which a head or chuck rotating in a fixed relation to the frame carries the shafting to be straightened, and the straightening devices are caused to move longitudinally back and forth with
15 reference to the shafting by the draft created by the rotation of the shafting in contact with the straightening devices.

My present invention resembles the machine shown in that application in many respects,
20 but differs primarily in this, that the rotating chuck which carries the shafting is caused to travel back and forth with reference to the straightening devices.

In the accompanying drawings, Figure 1 is
25 a plan view; Fig. 2, an elevation with part of the straightener-frame broken away; Fig. 3, an end view; Fig. 4, a view on the line 4 4 of Fig. 1, looking in the direction of the arrow; Fig. 5, a detail view showing merely the open
30 face of the chuck; Fig. 6, a longitudinal sectional view showing the chuck, its driving mechanism, &c.; Fig. 7, a rear view; Fig. 8, a sectional view on the line 8 8 of Fig. 1, looking in the direction of the arrow; Fig. 9, a longitudinal section on the line 9 9 of Fig. 7, and
35 Fig. 10 a detail sectional view illustrating the construction of the sheave-chuck, which is presently fully described.

The main frame is composed of two stand-
40 ards or supporting-feet, A A, and parallel bars A'. Midway between the bars A', and mounted in suitable bearings in the frame, is a rotating shaft, B, provided with a spline throughout its length, and having a driving-
45 pulley mounted upon its outer end. The rotating chuck C, the specific construction of which is presently described, is mounted in suitable bearings, as clearly seen in Figs. 6 and 2, in a chuck-frame, D. This frame is
50 composed of front and rear arch-bars, d, the lower ends of which are provided with collars,

which embrace and run upon the side rails, A', of the frame. The rear end of the chuck-spindle carries a driving-gear, E, which meshes with a pinion, e, which travels with, and slides
55 endwise on the spline-shaft B.

The straightening devices are located upon an extension, A² of the frame, which is supported by feet or uprights A³. The straightening devices are identical in construction
60 with those shown in my application before mentioned, and need but a very brief description here.

F is the bed of the straightener-frame, on which are mounted housings f f, in which
65 pairs of straightener-rollers, preferably beveled, are mounted. These housings are adjustable about a center, as clearly seen at f' in Fig. 1, and also are adjustable toward and from each other by means of a reversely-
70 threaded screw-bar, f².

Uprights G G, mounted on the bed-plate, are connected at the top by a cross-head, through which a screw-plunger works and supports another housing, G', which also carries beveled
75 straightener-rollers. This housing is also adjustable on a central pivot.

The shafting is indicated by the dotted lines in Fig. 2. It is secured in the chuck C, and when placed in position between the straight-
80 ener-rolls the upper pair of rolls is screwed down upon it to give the desired pressure and grip. The chuck now being rotated by power applied to the pulley on the spline-shaft B, the draft created by the rotation of the shaft-
85 ing between the straightener-rolls will draw the chuck-frame and its gearing along the spline-shaft, thus presenting all parts of the shafting to the rolls.

In order to accommodate the straightener-
90 rolls to shafting of different thicknesses, I mount the bed-plate F of the straightener-frame upon four or more screws, H, each of which is provided with a sprocket-wheel, about which an endless chain passes, and one being
95 provided with a handle. By working this handle the screws may be simultaneously raised and lowered to adjust the rollers with reference to the opening in the chuck C, so as to keep the bar in a perfectly horizontal po-
100 sition.

By reversing the direction of the belt which

drives the spline-shaft, the chuck-head may be caused to travel back and forth and pass the shafting through the straightener-rollers any desired number of times.

The specific construction of the chuck C which I consider novel and useful is illustrated in Figs. 4, 5, and 6.

Within the chuck-head C are pivoted two jaws, *c*, the inner edges of which are cut away or notched and preferably serrated. They are preferably so shaped that that portion of the jaw marked *C'* is about parallel with the plane of the end of the clamp-screw *c'*, so that the shafting is firmly gripped at that point. The other gripping-surface, *c''*, is about at right angles to the surface *c'*, so that the shafting is also gripped at that point. The serrated edges of the jaws *c* are straight or slightly curved, and when the two jaws are arranged, as shown in Fig. 4, on opposite sides of the shaft, the opposite notches present a somewhat rectangular opening for the shaft, as seen specially in Fig. 5, and the shaft is gripped firmly at top and bottom on each side. Springs *C'* tend normally to throw the jaws away from the shaft. This is a simple and efficient structure and well adapted for the purposes of this machine.

The machine thus far described is complete in itself; but I prefer to use in connection with it another rotating chuck on the opposite side of the straightener-frame, the operation being as follows: As the chuck C approaches the straightener-frame the shafting passes loosely through a chuck, O, the specific construction of which is novel and is presently described, and through a hollow guide or mandrel, I, which carries a rotating chuck, and upon the end of which a driving-gear, K, driven by a pinion, *k*, on a counter-shaft, is mounted. While the rotating chuck C, in which the shafting is firmly gripped, is being drawn up to the straightener-frame, the free end of the shafting passes loosely through the sheave-chuck and its mandrel, which form a guide and support for it. When the chuck C has been drawn up to the straightening devices, the machine is stopped, the chuck C is loosened, and the chuck O screwed up and rotated. In this manner the shafting is passed entirely through the straightener-rolls, and every portion of it, from end to end, may be properly acted upon.

The chuck O is illustrated in detail in Figs. 8, 9, and 10. The chuck-head is provided with fixed corner-plates *o*, between which four radially-moving blocks, P, operated by adjusting-screws *p*, projecting from the chuck-head, travel. The radially-moving blocks have each mounted in bearings therein sheaves, preferably having a grooved periphery, and preferably shaped as shown in Fig. 8. The peripheries of these sheaves may also be serrated, as seen more especially in Fig. 10. When the sheaves are screwed up tightly against the shafting, they grip it firmly, and the shafting is compelled to rotate with the sheaves; but

the sheaves, yielding to the draft of the shafting, created by its rotation in contact with the straightening devices, turn upon their axes and permit the shafting to pass between them. 70

As far as the broad feature of my invention is concerned—namely, causing the rotating chuck or device which carries the shafting to travel back and forth by the draft of the shaft rotating between the straightener devices—it may be embodied in various forms, and I do not limit myself to the specific details shown. 75

So far as I am aware, I am the first to provide means for raising and lowering the straightening devices relatively to the shaft-carrying device to adapt them to shafting of different size, and obviously that feature of my invention may also be embodied in various forms. 80

No claim is made herein to the sheave-chuck, nor to the combination of said chuck and straightening and drawing devices, as that forms the subject-matter of another application filed by me April 12, 1886, No. 198,560. 85

I claim as my invention— 90

1. The combination of the stationary straightening and drawing devices and the rotating and traveling chuck or device in which the bar or shafting is carried, whereby the shaft is advanced and straightened. 95

2. The combination of the straightening and draft rolls, the rotating chuck, the chuck-frame, the ways on which it moves, the chuck-driving gear, the spline-shaft, the pinion thereon which drives the chuck-gear, and a pulley for rotating the spline-shaft. 100

3. The combination of the main frame, a rotating shaft-supporting device which holds and rotates the shaft being operated upon, straightening and drawing rolls, and means for raising and lowering the straightening and drawing rolls relatively to the shaft-support, for the purpose described. 105

4. The combination of the main frame, a shaft-supporting device rotating in a fixed relation to the main frame, in which the shaft is carried and rotated, straightening devices located on one side of the shaft-support, means for varying the endwise relation of the shaft-support and said straightening devices, whereby all parts of the shaft are operated upon, and means for raising and lowering the straightening devices relatively to the shaft-support, substantially as and for the purpose set forth. 110

5. The combination of the main frame, a shaft-supporting device which holds the shaft being operated upon, straightening devices upon which the shaft rests at two points in different transverse lines, and means for simultaneously raising and lowering said straightening devices relatively to the shaft-support, substantially as and for the purpose described. 115

6. The combination, substantially as set forth, of the frame, the straightener-frame, the screws on which the straightener-frame is mounted, the sprockets on said screws, and the chain for simultaneously turning them. 120

7. The combination of the main frame, a rotating chuck in which the shafting is secured, 125

straightening and draft rolls, the straightener-frame, and means for raising and lowering the frame to adapt it to shafting of different sizes.

5 8. In a machine for straightening metal bars or shafting, a rotating chuck in which the shafting is carried, said chuck consisting of the combination of the chuck-head, the pivoted notched jaws, their springs, and the adjusting-screws.

10 9. In a machine for straightening metal bars or shafting, a rotating chuck in which the shafting is carried, said chuck consisting of the combination of the chuck-head, the pivoted notched jaws, and the adjusting-screws.

15 10. The combination of the longitudinally-

traveling rotating chuck C, in which the shafting being operated upon is secured, the straightening and draft rollers between which the shafting rotates, and the sheave-chuck 20 which forms a guide and support for the end of the shafting while it is being rotated by the chuck C, and by which the shafting is rotated to complete its passage through the straightener-rollers when the shafting has been released 25 from the chuck C.

In testimony whereof I have hereunto subscribed my name.

PHILIP MEDART.

Witnesses:

RICHARD C. SCHUM,

BENJ. A. SUPPAN.